Better Tower Defense

JACOB DUFAULT

SPONSOR: DR. BERNHARD

Motivation – Why?

- Lack of modern and *fun* tower defense games designed for LAN style multiplayer
- Major gameplay problems with current tower defense games
  - Waiting for a wave to clear is boring – cannot speedup due to multiplayer
  - One player can easily snowball and dominate the game, leading to a bad experience for the rest of the players
- Avenue to pioneer new implementation techniques and game design ideas

Goals

- Provide a playable game with multiplayer
- Multiple different game styles; support co-op and vs modes
- Implement a number of interesting features
  - ex: LAN host discovery, deterministic lock-step networking, data-driven entity system, multiplayer co-op campaign, difficulty scaling…
- More detail in the Timeline

Technical Challenges

- Overpowering content? Engine discovers this and scales difficulty
- Waiting – innovate in the game's economy, give players something to do while waiting for kills
  - Speedup is not valid – it's multiplayer!
  - Prevents snowballing in multiplayer as compared to classic implementation

Technical Challenges (cont)

- Effect system: towers apply *effects* to units; the effect of effects are dependent upon which effects are on the unit
  - Ex, one tower spills oil, another tower lights the unit on fire, so the unit takes critical damage
- Novel implementation – taking concepts from functional programming
  - Entity system takes one "World" in and emits another one
  - Two worlds can be diffed to discover differences; code can then react to those difference

Timeline – September 30th

- Requirements document
- Design document
- Test plan
- Implement Entity system
- Implement networking model; local host discovery and connection; connect to arbitrary IP address (w/o NAT punch through)
  - Requires lots of GUI work
- Implement unit spawning and waves

Timeline – October 28th

- Implement locomotion
  - This is not pathfinding
  - How to move directly to a point without running through another unit
- Implement effect system
  - Effects are dependent on other effects!
  - What's the best way to specify effect combinations?
- Implement building placement and tower definitions
  - Rectangular vs hexagonal grid
  - Building timers, tower upgrades?

Timeline – November 25th

- Implement resource system
  - General idea in mind, but needs refinement
- Implement power system
  - Ties directly into the effect system
- Implement different level types (endless, waves, attack)
  - Provides the building blocks for the campaign
  - Likely going to have close ties to the spawning system

Timeline – Next Semester

- Dynamic difficulty
- Create interesting content
  - Campaign, multiplayer maps, etc
  - Will require refactoring of implemented systems
  - Don't know what yet, though
- Polish
  - Lots to do on the art side, same with the GUI
- Play-testing

Questions?

- More details in the project plan document
- Thanks!